

## REMARKS/ARGUMENTS

### Status of the Claims

Prior to making this amendment, claims 1, 5-21, 24-28, and 34-42 were pending in this application. Claims 1, 5, 14, 21, 24, 28, 38, 40 and 42 have now been amended. A new claim 43 has been added so that claims 1, 5-21, 24-28, and 34-43 are now presented for further examination.

Claims 1, 21 and 28 have been amended to clarify and emphasize that both states of the phase shifting reflector reflect the carrier wave. Consistently with this amendment the word *reflecting* has been added in dependant claims 5, 24, 38, 40 and 42. The amendment to claim 14 corrects an apparent error. New independent claim 43 contains the features of claims 1, 8, 14, and 19 in combination.

No new matter is added by the amendments.

### Rejection under 35 USC 103

The Office Action rejected claims 1, 5-17, 20, 21, 24-28 and 36-42 under 35 USC 103(a) as obvious over Dubinsky US 6757218 ("Dubinsky"). Applicants respectfully disagree, as will now be explained further.

The office action has correctly pointed out that Dubinsky discloses an acoustic channel, an acoustic wave generator at the surface, a modulator and a reflecting terminal. However Dubinsky does not disclose the requirement of the independent claims 1, 21 and 28 that the modulator and the reflecting terminal are switchable between a first and second reflecting states which both reflects the carrier wave with the second reflecting state giving a shift in phase relative to reflection by said first state. Nor does Dubinsky disclose the detection of phase-related information in the reflected waves.

Thus the independent claims 1, 21 and 28 require that

- there is reflection in a first state of the apparatus
- there is also a reflection in a second state
- reflection in the second state differs in phase from reflection in the first state
- this difference in phase is detected at the surface.

By contrast the device in Fig 4b of Dubinsky provides reflection in a first state but no reflection in a second state as explicitly stated at col 6 lines 4&5 of Dubinsky. This is illustrated by the figures below

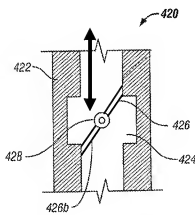


FIG. 4B

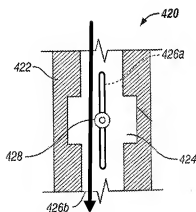


FIG. 4B

As shown at the left, in the closed position of Dubinsky's flapper 426, the carrier wave represented by the heavy arrow is reflected. By contrast in the open position of the flapper, the carrier wave goes straight through and is not reflected. The Official Action emphasizes similarities between the claimed modulator and the flapper shown in Dubinsky. However, as has just been illustrated, the flapper and resonator and Dubinsky do not reflect in one position. Thus it is emphasized that the requirement for reflection in both the first and second states of the apparatus is a distinction over Dubinsky.

For comparison, two states of the reflecting terminal of Fig 3b of the present application are shown below:

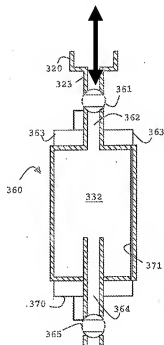


FIG. 3B

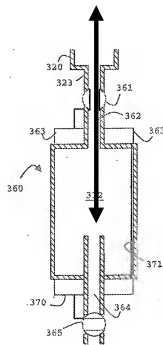


FIG. 3B

At the left the valve 361 is closed, and the carrier wave is reflected at this closed valve. At the right the valve 361 is open, but valve 365 remains closed. The carrier wave passes the open valve 361 into the volume 332 and is then reflected back.

The arrangement of Dubinsky provides amplitude modulation and the construction as taught by Dubinsky is specific to that. The Official Action contends that it would be obvious to adopt some other modulation technique. This is not admitted, but even if it is presumed for the purpose of argument that someone did conceive the broad idea of adopting a different form of modulation in place of the amplitude modulation taught by Dubinsky, there is nothing to teach or suggest that this general idea should be reduced to practice in the manner now claimed by present independent claims.

As held in *In re Gartside* 203 F.3d 1305 and discussed further in *In re Zurko* 258 F.3d 1379, issues of fact, including issues of what is known in the art, must be supported by **substantial evidence**. It is apparent from the discussion at MPEP 2144.03 that this will generally be documentary evidence. Whilst it is true that phase shift was a known method of modulation, no documentary evidence has been put forward in these proceedings which goes beyond the bare concept of phase shift modulation and teaches the requirements of the independent claims for two reflective states of a reflector.

No document is being asserted to disclose apparatus or method able to reflect a continuous carrier wave with phase shift modulation.

No document is being asserted to disclose switching a reflector between positions which reflect with a difference in phase.

Thus, it is respectfully submitted that a combination of Dubinsky with an assertion that it would be obvious to use some other form of modulation falls short of properly evidenced teaching or suggestion of all the features of present claims 1, 21 and 28. It is requested that the objections of obviousness over Dubinsky as sole document are withdrawn.

The Office Action rejected claims 19 and 34 over a combination of Dubinsky and Priest et al US 5,444,324. On page 8, the Office Action asserts that Priest column 1 lines 20-24 teach the conversion of acoustic energy from the surface into electric energy. Applicants respectfully submit that this is **not a correct reading of Priest**. Column 1 line 21 of Priest teaches a downhole transducer which converts electrical energy transmitted from the surface into acoustic energy which is directed from the downhole tool into the formation.

Thus it can be appreciated that the present invention uses an acoustic carrier wave generated at the surface (in contrast with Priest) to provide three functions, which are to supply energy to a downhole location (claim 19) to convey information from the surface (claim 14) and to provide the carrier for conveying information back to the surface (claim 1). Nothing in Dubinsky or Priest teaches using an acoustic carrier to provide all three functions.

The Office Action also rejected claim 18 over a combination of Dubinsky and Priest et al US 5,444,324. Priest uses a piezo electric device to convert electrical and acoustic energy from one to the other. However, claim 18 calls for a piezo electric device to act as the modulator of claim 1, switching the reflector between its two states. This is not taught or suggested by Priest's use of a piezoelectric device to convert energy from one form to another.

It is requested that the rejections of claims 18, 19 and 34 are withdrawn.

New claim 43 recites all three functions of the acoustic wave transmitted from the surface, and also specifies that the acoustic channel is a tubing string, thus claiming the combination of the telemetry system and a tubing string such as coiled tubing inserted into a borehole

Conclusion

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

In the event that a fee or refund is due in connection with this Amendment, the Commissioner is hereby authorized to charge any underpayment or credit any overpayment to Deposit Account No 19-0615. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned.

Respectfully submitted,

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